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(54) GENERATOR FOR CURSOR CONTROL SIGNAL AND VIDEO SIGNAL

(57)Abstract:

PURPOSE: To provide a generator which can produce the cursor control signals and video signals.

CONSTITUTION: A generator for cursor control and video signals is provided with an image pickup means 301 which includes a 1st image pickup part 403 that receives only the infrared area radiation in a prescribed image pickup area and a 2nd image pickup part 404 that receives only the visible area light in a prescribed image pickup area.

Then remote control transmitter 20 containing a light emitting element 21 that generates the infrared ray is added, together with a cursor control signal generating means 302 which detects the position of the element 21 based on the output of the part 403 and then produces the cursor control signal to control the cursor position on a prescribed display screen based on the position of the element 21, and a video signal generating means 303 which produces the video signals in the image pickup area based on the output of the part 404.

CLAIMS

[Claim(s)]
[Claim 1]An imaging means which has the 2nd image pick-up part which receives only visible region light in the 1st image pick-up part which receives only infrared region light in a predetermined imaging region, and the above-mentioned predetermined

imaging region, Based on an output of a remote control transmitter provided with a light emitting device which generates infrared rays, and the above-mentioned 1st image pick-up part, a position of the above-mentioned light emitting device is detected, A cursor control signal generation means which generates a cursor control signal for controlling the cursor position on a predetermined display screen based on a position of the detected above-mentioned light emitting device, And a cursor control signal and a picture signal generator provided with a video signal generating means which generates a video signal of the above-mentioned imaging region based on an output of the above-mentioned 2nd image pick-up part.

[Claim 2]An optical distributor with which the above-mentioned imaging means distributes light out of the above-mentioned predetermined imaging region to infrared region light and light range light, The cursor control signal according to claim 1 and a picture signal generator consisting of the 2nd imaging device that receives visible region light distributed by the 1st imaging device and the above-mentioned optical distributor which receive infrared region light distributed by the above-mentioned optical distributor.

[Claim 3]The cursor control signal according to claim 1 and a picture signal generator characterized by comprising the following.

The characteristic that the above-mentioned 1st image pick-up part and the above-mentioned 2nd image pick-up part comprise one imaging device, and the above-mentioned imaging means is arranged ahead of the one above-mentioned imaging device and the above-mentioned imaging device, and the penetration characteristic of light penetrates only infrared region light with an external signal. A light transmittance state variable member changed to the characteristic which penetrates only visible region light, A timing-control means to control a switching means, the above-mentioned light transmittance state variable member, and the above-mentioned switching means for changing an output signal of the above-mentioned imaging device to the above-mentioned cursor control signal generation means and the above-mentioned video signal generating means, and sending it.

2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application]This invention relates to the cursor control signal and picture signal generator which are made to generate the video signal of a predetermined imaging region while generating the cursor control signal for controlling the cursor on a display screen based on detecting the position of the remote control transmitter in a predetermined imaging region.
[0002]
[Description of the Prior Art]Conventionally, as a cursor control signal generation device, JP,63-223913,A has a device of a statement. In this device, two or more infrared-emitting diodes arranged radiately are formed in the remote control transmitter, and the infrared rays with which phases differ from each infrared-emitting diode, respectively are transmitted. These infrared rays are received by the receiving set. And based on the relation between the signals of each infrared-emitting diode received with the receiving set, direction of the remote control transmitter to a receiving set is distinguished, and the cursor position on a display screen is controlled based on direction of the distinguished remote control transmitter.
[0003]However, conventionally [above-mentioned], with a device, in order to have to form two or more infrared-emitting diodes in a remote control transmitter, the accuracy of the detecting position of a remote control transmitter worsened with dispersion in each infrared-emitting diode, etc., and there was a fault which becomes

complicated [the algorithm of a detecting position]. Since the number of keys of a remote control transmitter also increased, it had become the hindrance of the miniaturization of a remote control transmitter.

[0004]Then, these people transmit the infrared rays of a specified wavelength from a remote control transmitter, The device which detects the position of a transmitter and generates a cursor control signal based on the position of the detected transmitter was developed by detecting only the infrared rays transmitted from the remote control transmitter by the imaging device provided with CCD (the Heisei 4 patent application refers to No. 153665).

[0005]

[Problem(s) to be Solved by the Invention]Such a cursor control signal generation device can be applied not only to a television receiver but to remote control of a home ODEO video system and remote control of a presentation system.

[0006]As a home ODEO video system, that with which the ODEO video device and the TV phone were combined will be considered to be requested in the future. It is thought that the function of recording the situation where the presentation is performed etc. on a video device as a presentation system is needed. In such a case, a call person's video signal, the video signal of the situation where the presentation is performed, etc. are needed for a TV phone besides a cursor control signal.

[0007]An object of this invention is to provide the cursor control signal and picture signal generator which can generate a cursor control signal and a video signal.

[0008]

[Means for Solving the Problem]A cursor control signal and a picture signal generator by this invention, An imaging means which has the 2nd image pick-up part which receives only visible region light in the 1st image pick-up part which receives only infrared region light in a predetermined imaging region, and the above-mentioned predetermined imaging region, Based on an output of a remote control transmitter provided with a light emitting device which generates infrared rays, and the above-mentioned 1st image pick-up part, a position of the above-mentioned light emitting device is detected, A cursor control signal generation means which generates a cursor control signal for controlling the cursor position on a predetermined display screen based on a position of the detected above-mentioned light emitting device, And it has a video signal generating means which generates a video signal of the above-mentioned imaging region based on an output of the above-mentioned 2nd image pick-up part.

[0009]An optical distributor which distributes light out of the above-mentioned

predetermined imaging region to infrared region light and light range light as the above-mentioned imaging means, for example, It comprises the 2nd imaging device that receives visible region light distributed by the 1st imaging device and the above-mentioned optical distributor which receive infrared region light distributed by the above-mentioned optical distributor.

[0010]Constitute the above-mentioned 1st image pick-up part and the above-mentioned 2nd image pick-up part from one imaging device, and arrange the above-mentioned imaging means ahead of the one above-mentioned imaging device and the above-mentioned imaging device, and the penetration characteristic of light with an external signal. A light transmittance state variable member changed to the characteristic which penetrates only infrared region light, and the characteristic which penetrates only visible region light, It may be made to constitute from a timing-control means to control a switching means, the above-mentioned light transmittance state variable member, and the above-mentioned switching means for changing an output signal of the above-mentioned imaging device to the above-mentioned cursor control signal generation means and the above-mentioned video signal generating means, and sending it.

[0011]

[Function]The imaging means has offered the 2nd image pick-up part which receives only visible region light in the 1st image pick-up part which receives only infrared region light in a predetermined imaging region, and the above-mentioned predetermined imaging region. Infrared rays are transmitted from the light emitting device provided in the remote control transmitter. Based on the output of the 1st image pick-up part, a cursor control signal for the position of a light emitting device to be detected and control the cursor position on a predetermined display screen based on the position of the detected light emitting device occurs. The video signal of an imaging region occurs based on the output of the 2nd image pick-up part.

[0012]

[Example]Hereafter, the example of this invention is described with reference to drawings.

[0013]Drawing 1 shows the composition of the cursor control signal and the picture signal generator. The remote control transmitter 20 is provided with the single infrared-emitting diode 21 which emits the infrared rays of wide directivity, the single operation key 22, and the electric power switch (graphic display abbreviation). The remote control transmitter 20 gives an operating command to a television receiver etc. That is, cursor and a functional index are displayed on the display 31 of a television

receiver, and the remote control transmitter 20 is used in order to choose the functional index which controls the cursor position and which is in the cursor by both the operation keys 22.

[0014]The imaging device 301 picturizes the object in a predetermined imaging region while picturizing the remote control transmitter 20 in a predetermined imaging region. The imaging device 301 is provided with the optical system lens 401, the optical distributor 402, and the two imaging devices 403 and 404. As the imaging devices 403 and 404, CCD is used, for example.

[0015]The light which passed the optical lens 401 is separated into the light of an infrared region, and the light of a visible region from the imaging region of the imaging device 301 by the optical distributor 402. As the optical distributor 402, a cold mirror is used, for example. The light of the infrared region separated by the optical distributor 402 is received by the imaging device 403. The light of the visible region separated by the optical distributor 402 is received by the imaging device 404.

[0016]Therefore, image formation of the object in an imaging region is carried out to the imaging device 404. The output of the imaging device 404 is recorded on the recorder 305 while it is changed into a video signal by the video-signal generation circuit 303 and is displayed on the display 304.

[0017]Since only the infrared signal outputted to the imaging device 403 from the remote control transmitter 20 is received, image formation only of the remote control transmitter image (infrared-emitting diode image) is carried out to the imaging device 403. The output of the imaging device 403 is sent to the cursor control signal generating circuit 302. The cursor control signal generating circuit 302 detects the position of the remote control transmitter 20 based on the output of the imaging device 403, and generates the cursor control signal which controls the cursor position displayed on the display 31 based on this detection position. The details of the cursor control signal generating circuit 302 are mentioned later.

[0018]As the imaging device 403 which receives the above-mentioned infrared region light, the position detecting element (PSD (Position Sensing Detector)) using the surface resistance of the photo-diode besides CCD, etc. can be used.

[0019]Drawing 2 shows the modification of the imaging device. This imaging device is provided with the optical system lens 411, the imaging device 413 of 412 or 1 optical system filter, the timing generating circuit 414, and the switching circuit 415.

[0020]The light which passed the optical lens 411 is sent to the imaging device 413 via the optical system filter 412 from the imaging region of an imaging device. As the optical system filter 412, that to which a light transmission characteristic is changed

by the signal from the outside, for example, a thing like a liquid crystal shutter, is used. In this example, the optical characteristic of the optical system filter 412 is changed to the characteristic of passing only infrared region light, and the characteristic of passing visible region light, based on the signal from the timing control circuit 414.

[0021]Based on the signal from the timing control circuit 414, the switching circuit 415 changes the output of the imaging device 413 to the output terminal A and the output terminal B, and outputs it. Here, the cursor control signal generating circuit 302 of drawing 1 shall be connected to the output terminal A, and the video-signal generation circuit 303 of drawing 2 shall be connected to the output terminal B.

[0022]Drawing 3 shows the timing controlled by the timing control circuit 414 of drawing 2.

[0023]As for the signal CTL outputted from the timing control circuit 414, the level changes to H or L for every prescribed period.

[0024]The signal CTL serves as the characteristic of passing only infrared region light, during the H, and the optical characteristic of the optical system filter 412 turns into the characteristic that the signal CTL passes visible region light during the L. Therefore, the signal CTL is received during the H, infrared region light is received by the imaging device 413, the signal CTL is sent during the L and an infrared region light light-receiving signal is sent to the switching circuit 415. The signal CTL is received during the L, visible region light is received by the imaging device 413, the signal CTL is sent during the H and a visible region light light-receiving signal is sent to the switching circuit 415.

[0025]The signal CTL outputs the visible region light light-receiving signal inputted during the H from the terminal B, and the switching circuit 415 outputs the infrared region light light-receiving signal into which the signal CTL is inputted during the L from the terminal A. Therefore, a visible region light light-receiving signal is sent to the video-signal generation circuit 303, and an infrared region light light-receiving signal is sent to the cursor control signal generating circuit 302.

[0026]Every 1/[of the usual period for reading the data of one screen from the imaging device 413] 2 period. It is preferred to read the data for one screen from the imaging device 413 within 1 / 2 periods of the usual period for changing the level of the signal CTL to H or L, and reading the data of one screen. However, when it does in this way, after extending in time the signal outputted from the switching circuit 415 twice, it is necessary to make it send to the cursor control signal generating circuit 302 or the video-signal generation circuit 303.

[0027]Drawing 4 shows the composition of the cursor control signal generating circuit

302 used when the imaging device of drawing 1 is used as an imaging device.

[0028]Synchronizing with the clock outputted, picture element data is sent to A/D converter 2 one by one from the imaging device 403 (CCD403) from the clock generation circuit 61 of the timing circuit 6. The picture element data sent to A/D converter 2 is changed into a digital signal by A/D converter 2.

[0029]The digital data outputted from A/D converter 2 is compared with a predetermined threshold in the comparison circuit 3. When inputted digital data is beyond a threshold, inputted digital data is outputted from the comparison circuit 3 as it is. When inputted digital data is smaller than a threshold, the digital signal of "0" is outputted from the comparison circuit 3. That is, the picture element data whose luminosity is smaller than a predetermined level is regarded among the images picturized by CCD403 as not infrared rays but the noise from the remote control transmitter 20, and generating of malfunction by a noise is prevented.

[0030]The output of the comparison circuit 3 is inputted into the maximum detector circuit 4. This maximum detector circuit 4 consists of the selector 41, the data memory 42, the discrimination circuit 43, the counter 44, the counter memory 45, and the coordinates detector circuit 46, and detects the position of the maximum luminance in 1 screen of CCD403, and its value.

[0031]The largest value is memorized by the data memory 42 among the picture element data inputted by the present in 1 screen in the maximum detector circuit 4. The picture element data inputted into the maximum detector circuit 4 from the comparison circuit 3 is sent to the discrimination circuit 43, and is compared with the picture element data (memory output) read from the data memory 42. If the input pixel data of the discrimination circuit 43 is larger than a memory output, it will output the discrimination signal of H level, and if the direction of input pixel data is below a memory output, it will output the discrimination signal of L level.

[0032]The selector 41 is controlled by the discrimination signal outputted from the discrimination circuit 43. That is, when a discrimination signal is H level, the input pixel data from the comparison circuit 3 is chosen by the selector 41, and the data memory 42 is supplied. Therefore, the contents of the data memory 42 are updated in this case. When a discrimination signal is L level, a memory output is chosen by the selector 41 and the data memory 42 is supplied. Therefore, the contents of the data memory 42 are not updated in this case. That is, in each screen, the contents of the data memory 42 are rewritten, when input pixel data is larger than the maximum of the picture element data inputted by then.

[0033]The timing circuit 6 is provided with the clock generation circuit 61 and the

status signal generation circuit 62. The clock generation circuit 61 is supplied to both the counters 44 as a clock as if the clock of frequency according to the pixel number of CCD403 is generated and CCD403 is controlled. Therefore, the counted value of the counter 44 expresses the data of what position the picture element data read from CCD403 is among one screen.

[0034]The status signal generation circuit 62 generates the status signal used as H level during a vertical-retrace-line period based on the Vertical Synchronizing signal outputted when read-out from CCD403 of the picture element data of one screen is completed.

[0035]The counter memory 45 memorizes counted value K of the counter 44 at that time, whenever the discrimination signal of H level from the discrimination circuit 43 is inputted. And by the rise timing of a status signal, the contents of the counter memory 45 are read and the coordinates detector circuit 46 is supplied. Therefore, the data showing what the number of the pixels of maximum luminance is among one screen is supplied to the coordinates detector circuit 46 from the counter memory 45 for every screen. In the coordinates detector circuit 46, the coordinate data (X, Y) showing the position of the remote control transmitter image on the CCD screen A is called for based on the data sent from the counter memory 45.

[0036]The data memory 42, the counter 44, and the counter memory 45 are reset in the falling timing of a status signal. Thus, the position of the remote control transmitter image on the CCD screen A is detected for every screen.

[0037]The picture element data and the status signal which are outputted from the data memory 42 are inputted into the decoder 5, and the operation pulse generated when one [the operation key 22 of the remote control transmitter 20] gets over. The demodulation operation of an operation pulse and an operation pulse is explained in full detail behind.

[0038]The coordinate data (X, Y) showing the position of the remote control transmitter image on the CCD screen A obtained in the coordinates detector circuit 46 is supplied to the cursor control circuit 7. The cursor control circuit 7 comprises the operation part 71, the operation prohibition part 72, and the control signal generating section 73. The operation prohibition part 72 is mentioned later.

[0039]The variation (**X, **Y) of coordinates (X, Y) which expresses with the operation part 71 the position of the remote control transmitter image on the CCD screen A obtained for every screen is calculated. That is, in the operation part 71, the variation of coordinates (**X, **Y), i.e., the movement magnitude of the remote control transmitter image on the CCD screen A, is calculated by subtracting the

coordinates in front of 1 screen, and the present coordinates.

[0040]The output of the operation part 71 is supplied to the control signal generating section 73. In the control signal generating section 73, the movement magnitude of the cursor 200 on the display screen B of the display 31 is determined by carrying out the multiplication of the predetermined coefficient to the movement magnitude of the remote control transmitter image on the CCD screen A. In order to double the move direction of the remote control transmitter image in the CCD screen A in the move direction of the actual remote control transmitter 20, the numerals of horizontal coordinates are reversed. Thereby, the move direction and movement magnitude of a remote control transmitter image on the CCD6 screen A are changed into the move direction and movement magnitude of the cursor 200 on the display screen B of the display 31.

[0041]The move direction and movement magnitude of cursor on the display screen B of the display 31 called for by the control signal generating section 73 are outputted as a cursor control signal from the control signal generating section 73. The operation pulse from the cursor control signal and the decoder 10 from the control signal generating section 73 is supplied to the display circuit 8. The display circuit 8 performs the function which cursor had chosen, when the operation key 22 is pressed based on an operation pulse, while controlling the cursor position on the display screen B of the display 31 based on a cursor control signal.

[0042]Drawing 5 is a flow chart which shows roughly the flow of processing by the cursor control signal generating circuit mentioned above. Based on drawing 5, the flow of processing by a cursor control signal generating circuit is explained briefly.

[0043]If a status signal is set to L level (Step 1), while counted value K of the counter 44 is set to 0, the data memory 42 and the counter memory 45 will be cleared (Steps 2-4).

[0044]Then, based on the clock outputted from the clock generation circuit 61, counted value K of the counter 44 is carried out +1 (Step 5), and picture element data is read from CCD403 and changed into a digital signal with A/D converter 2. Then, it is distinguished in the comparison circuit 3 whether the inputted image data is beyond a predetermined threshold (Step 6).

[0045]The inputted picture element data is beyond a predetermined threshold, and when picture element data is already memorized by the data memory 42, it is distinguished by the discrimination circuit 43 whether (Step 8) and input pixel data are larger than the picture element data memorized by the data memory 42 (Step 9).

[0046]When the inputted picture element data is smaller than a predetermined

threshold (it is NO at Step 6), at the time of below the picture element data memorized by the data memory 42 (it is NO at Step 9), input pixel data waits for the read timing of the following picture element data, and returns to Step 5.

[0047]When input pixel data was larger than the picture element data memorized by the image data memory 42 when picture element data was not memorized by the data memory 42 (it is NO at Step 8) or and it is distinguished, at the (step 9 YES), While input pixel data is memorized by the data memory 42 (Step 10), counted value K of the counter 44 is memorized by the counter memory 45 (Step 11). And when counted value K of the counter 44 is smaller than the pixel number J which should be read by 1 screen scan, it waits for the read timing of (Step 12) and the following picture element data, and it returns to Step 5.

[0048]In Step 12, when counted value K of the counter 44 reaches the pixel number J which should be read by 1 screen scan, it progresses to Step 13 and waits to set a status signal to H level. If a status signal is set to H level, the contents of the counter memory 45 will be sent to the coordinates detector circuit 46, and will be changed into the coordinate data on the CCD screen A (Step 14). Then, cursor control is performed based on this coordinate data (Step 15). It returns to Step 1, it waits to set a status signal to L level, and the processing to the following screen is started.

[0049]Drawing 6 shows the relation between a motion of the remote control transmitter 20 in the image pick-up area A of CCD403, and a motion of the cursor 200 on the display screen B of the display 31.

[0050]In the cursor 200, if the field in the controllable image pick-up area A on CCD403 is set to control area CE over the display screen B whole region, this control area CE will be small set up to the image pick-up area A, and it is movable in the image pick-up area A.

[0051]When the remote control transmitter 20 is being moved within control area CE, control area CE does not move. If the remote control transmitter 20 is raised from the lower end of control area CE to an upper bed to drawing 6 as shown in a1-a2, the cursor 200 will stop in the upper bed position of the display screen B, as shown to drawing 6 in b1-b2. Then, if the remote control transmitter 20 is further raised as shown in a2-a3, as it takes to it and a dashed line also shows control area CE, it will go up. This is because the cursor control signal is what does not express the absolute position of the remote control transmitter 20, and expresses movement magnitude. Therefore, if the remote control transmitter 20 is dropped after this as shown in a3-a4, the cursor 200 will descend, as shown in b2-b3 in connection with it.

[0052]If the remote control transmitter 20 leaves the image pick-up area A, the

cursor 200 will stand it still directly above the cursor position when the remote control transmitter 20 leaves the image pick-up area A. Then, if the remote control transmitter 20 advances into the image pick-up area A again from a different position from the position which left the image pick-up area A, new control area CE will be formed based on that ingress position, and the cursor 200 will start movement from the stationary position.

[0053]However, as shown in drawing 7, in the state where the cursor 200 is standing it still to the upper bed b1 of the display screen B the remote control transmitter 20, When it tends to be made to descend and is going to lower the cursor 200 after making it go up from the downward position a1 of the image pick-up area A to the position a2 in the image pick-up area A, the following inconvenience arises. Namely, when new control area CE will be formed if the remote control transmitter 20 is raised until it goes into the image pick-up area A, but fully not going up, Since the remote control transmitter 20 reaches the lowermost end position a3 of the image pick-up area A before the cursor 200 will reach the lowermost end of the display screen B, if the remote control transmitter 20 is dropped from the position a2, as the cursor 200 is in the display screen B, the inconvenience of stopping at the position b2 arises.

[0054]In order to prevent such inconvenience, as shown in drawing 7, when the remote control transmitter 20 advances into the image pick-up area A from the outside of the image pick-up area A, the operation part 71 sets up the area (effective area SE) which operates effectively in the image pick-up area A, The cursor control signal is kept from occurring until the remote control transmitter 20 reaches effective area SE. The relation between effective area SE and the image pick-up area A is as being shown in drawing 7. In drawing 7, SX expresses the perpendicular direction length of control area CE of a size with regular SY for the horizontal length of regular control area CE of a size, respectively.

[0055]The operation prohibition part 72 is formed in order to forbid operation of the operation part 71, until the remote control transmitter 20 reaches effective area SE (i.e., until control area CE of a regular size is formed), when the remote control transmitter 20 advances into the image pick-up area A from the outside of the image pick-up area A.

[0056]Drawing 8 shows the detailed composition of the operation prohibition part 72.

[0057]The operation prohibition part 72 consists of the image pick-up area discrimination circuit 201, the effective area discrimination circuit 202, D flip-flop 203, and NAND gate 204.

[0058]The image pick-up area discrimination circuit 201 distinguishes whether the

remote control transmitter 20 exists in the image pick-up area A by distinguishing the existence of the coordinate data outputted from the coordinates detector circuit 46. The effective area discrimination circuit 202 distinguishes whether the remote control transmitter 20 exists in effective area SE by comparing with the coordinate data corresponding to effective area SE the coordinate data outputted from the coordinates detector circuit 46.

[0059]D flip-flop 203 reads and holds the output S2 of the effective area discrimination circuit 202 inputted into data input terminal D, when the input signal Q2 of the enable terminal EN is H level (enabling state). NAND gate 204 calculates the NAND logic of the output Q1 of D flip-flop 203, and the output S1 of the image pick-up area discrimination circuit 201. The output Q2 of NAND gate 204 is sent to the enable terminal EN of D flip-flop 203. When the output of D flip-flop 203 is H level, operation part 71 is made into an operation enabling way, and when the output of D flip-flop 203 is L level, operation part 71 is made into an operation prohibited state.

[0060]Drawing 9 shows the signal of each part of the operation prohibition part 72.

[0061]If the remote control transmitter 20 enters in the image pick-up area A from the outside of the image pick-up area A as shown in drawing 7 (time t1), the output S1 of the image pick-up area discrimination circuit 201 will be reversed on H level from L level. At this time, since the output Q1 of D flip-flop 203 is L level, the output Q2 of NAND gate 204 is H level, and D flip-flop 203 is made into enabling state. However, since the output S2 of the effective area discrimination circuit 202 is L level, the output Q1 of D flip-flop 203 serves as as [L level]. Therefore, operation operation of the operation part 71 is forbidden.

[0062]Next, if the remote control transmitter 20 advances into effective area SE (time t2), the output S2 of the effective area discrimination circuit 202 will be reversed on H level from L level. Therefore, the signal S2 of this H level is read into D flip-flop 203, and the output Q1 of D flip-flop 203 serves as H level. Thereby, the operation prohibited state of the operation part 71 is canceled.

[0063]Since the output S1 of the image pick-up area discrimination circuit 201 also serves as H level when the output Q1 of D flip-flop 203 is set to H level, the output Q2 of NAND gate 204 serves as L level. For this reason, D flip-flop 203 will be in the De Dis navel orange state. Therefore, when the remote control transmitter 20 leaves effective area SE in the image pick-up area A, even if the input signal S2 of D flip-flop 203 changes, the output Q1 of D flip-flop 203 is held at H level.

[0064]Since the output S1 of the image pick-up area discrimination circuit 201 will be set to L level if the remote control transmitter 20 leaves the image pick-up area A

(time t3) when D flip-flop 203 is in the De Dis navel orange state, the output Q2 of NAND gate 204 serves as H level. Therefore, D flip-flop 203 will be in enabling state again. At this time, since the output S2 of the effective area discrimination circuit 202 is L level, the signal S2 of L level is read into D flip-flop 203, and the output Q1 of D flip-flop 203 serves as L level. Thereby, operation of the operation part 71 is forbidden.

[0065]That is, even if the remote control transmitter 20 enters in the image pick-up area A from the outside of the image pick-up area A, cursor control is forbidden until the remote control transmitter 20 goes into effective area SE. And once the remote control transmitter 20 goes into effective area SE, cursor control will be performed until the remote control transmitter 20 comes out from the image pick-up area A.

[0066]Drawing 10 shows the remote control signal outputted from the remote control transmitter 20.

[0067]The infrared rays outputted from the remote control transmitter 20 are continuously outputted as a subcarrier of 38KHZ, when the operation key 22 is not pressed. And if the operation key 22 is pressed, the periods of H level are 1 / 60 seconds, the period of L level will be modulated by the operation pulse for 1 / 30 seconds, and this subcarrier will be sent out. However, the picture of CCD403 to 1 screen shall be read every [1/] 60 seconds.

[0068]As this operation pulse, a cycle is not equal to the twice of the time when the picture of one screen is read other than the above, and it is possible to use the pulse in which the period of L level is longer than the time when the picture of one screen is read.

[0069]Drawing 11 shows the detailed composition of the decoder 5.

[0070]By the rise timing of a status signal, the data outputted from the data memory 42 is latched to the latch circuitry 211. That is, the largest data in each screen is inputted. The latched data is compared with a predetermined threshold in the comparison circuit 212. This threshold is set up between H level of the above-mentioned operation pulse, and L level. The comparison circuit 212 outputs 1 bit data of "0", when input pixel data is larger than a threshold, and input pixel data is smaller than a threshold, "1" and. These 1 bit data are supplied to the shift register 213.

[0071]The shift register 213 uses a status signal as a clock, carries out a shift action, and outputs the parallel outputs U1-U5. And the outputs U1-U5 are supplied to AND circuit 214 and OR circuit 215, respectively. The output of AND circuit 214 and the output of OR circuit 215 are supplied to EKUSUKURU sheave OR circuit 216.

[0072]This decoder 5 is 5 screen units, and distinguishes one of the operation key 22,

and an OFF state.

[0073]Since 5 screen continuation is carried out and the data of "1" is outputted from the comparison circuit 212 when the operation key 22 is OFF, the five outputs U1-U5 of the shift register 213 serve as H level altogether. Therefore, both the outputs of AND circuit 214 and OR circuit 215 serve as H level, and the output of the exclusive OR circuit 216 serves as L level. When there is no remote control transmitter 20 into the image pick-up area A, the signals U1-U5 serve as L level altogether, both the outputs of AND circuit 214 and OR circuit 215 serve as L level, and, similarly the output of the exclusive OR circuit 216 serves as L level.

[0074]By the remote control transmitter 20 being in the image pick-up area A, when the operation key 22 is one, Since the subcarrier (modulated wave) modulated by the operation pulse among five screens is received by CCD403, in five continuous screens, the screen where only a portion with small amplitude of a modulated wave is received, and the screen where the portion containing a portion with big amplitude of a modulated wave is received will be intermingled. Therefore, the signal of H level and L level comes to be intermingled in the five outputs U1-U5 of the shift register 213. For this reason, since the output of AND circuit 214 serves as L level and the output of OR circuit 215 serves as H level, the output of the exclusive OR circuit 216 serves as H level.

[0075]That is, when the operation key 22 is not pressed, the output of the decoder 5 serves as L level, and when the operation key 22 is pressed, the output of the decoder 5 serves as H level. The signal outputted from this decoder 5 is used as a signal which controls operation of a television receiver as an operation key on-off signal.

[0076]Drawing 12 and drawing 13 show the application of this invention.

[0077]Drawing 12 shows the home audio video system provided with the video telephone function. In this home audio video system, the indicator 501 for televisions and the indicator 502 for TV phones are formed on the display screen. Function icon E is also displayed on a display screen. Function icon E is remotely controlled by the remote control transmitter 20 of drawing 1. A call person's image picturized by the imaging device 301 explained by drawing 1 or drawing 2 is sent to the call destinations of a TV phone.

[0078]Drawing 13 shows the presentation system. On a display screen, in the picture used for a lecturer's explanation, and this example, while a title name, an animation, three still pictures, etc. are displayed, function icon E is displayed with this presentation system. Function icon E is remotely controlled by the remote control transmitter 20 of drawing 1. The image of the lecture scene picturized by the imaging

device 301 explained by drawing 1 or drawing 2 is recorded on the recorder which is not illustrated.

[0079]

[Effect of the Invention]According to this invention, a cursor control signal and a video signal can be generated.

2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a block diagram showing the outline composition of a cursor control signal and a picture signal generator.

[Drawing 2]It is a block diagram showing the example of a picture displayed on ****** which shows the modification of an imaging means.

[Drawing 3]It is an explanatory view showing the timing controlled by the timing control circuit 414 of drawing 2.

[Drawing 4]It is an electric block figure showing a cursor control signal generating circuit.

[Drawing 5]It is a flow chart which shows the flow of processing by a cursor control signal generating circuit.

[Drawing 6]It is a mimetic diagram showing the display screen B of the display 31 with

control area CE set up in the image pick-up area A of CCD403.

[Drawing 7]It is a mimetic diagram showing the display screen B of the display 31 with effective area SE set up in the image pick-up area A of CCD403.

[Drawing 8]It is an electric diagram showing the composition of the operation inhibit circuit of drawing 4.

[Drawing 9]It is a time chart which shows the signal of each part of drawing 8.

[Drawing 10]It is a time chart which shows the signal outputted from a remote control transmitter.

[Drawing 11]It is an electric diagram showing the composition of the decoder of drawing 4.

[Drawing 12]It is a mimetic diagram showing the application of this invention.

[Drawing 13]It is a mimetic diagram showing other applications of this invention.

[Description of Notations]

4 Maximum detector circuit

5 Decoder

6 Timing circuit

7 Cursor control circuit

8 Display circuit

20 Remote control transmitter

21 Infrared-emitting diode

22 Operation key

31 Display

301 Imaging device

302 Cursor control signal generating circuit

303 Video-signal generation circuit

304 Display

305 Recorder

402 An optical distributor

403, 404, 413 imaging devices

412 Optical system filter

414 Timing control circuit

415 Switching circuit